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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/082,454	02/25/2002	Alfred Wade Muldoon		4361

7590  
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09/26/2007

EXAMINER
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KURR, JASON RICHARD

ART UNIT	PAPER NUMBER
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2615

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/082,454	<b>Applicant(s)</b> MULDOON, ALFRED WADE	
	<b>Examiner</b> Jason R. Kurr	<b>Art Unit</b> 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 21, 25-29 and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Bartels et al (US 6,297,569).

With respect to claim 21, Bartels discloses an electronic control (fig.1 #10,12) including sensing means (fig.1 #23,26) to scan one or more energizing circuits (fig.1 #14) of a device, said energizing circuits containing one or more transducers (fig.1 #22, col.3 ln.2-6), said transducers requiring currents to be energized, said energizing circuits including switches (fig.1 "K1,K2"), said switches capable of carrying said currents, said switches having intended states, said energizing circuits carrying said currents (col.3 ln.52-63), said transducers having a potential to cause said device to operate in a hazardous manner if said transducers are mistakenly energized, said transducers never causing said device to operate in a hazardous manner when said transducers are in an unenergized state (col.1 ln.45-47, Bartels discloses that switch failure may cause hazardous conditions, such as the unexpected powering of a load),

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said intended states are known to said control whether said intended states are set by said control or an override in said device (col.3 ln.21-26), said control; identifying any of said switches as functional switches that said sensing means verifies are in said intended states, identifying any of said switches as non-functional switches that said sensing means verifies are not in said intended states (col.2 ln.25-41, col.4 ln.6-17), using at least one of said functional switches to preclude said currents from flowing through one or more of said non-functional switches preventing said transducers from being mistakenly energized (col.1 ln.31-36, col.12 ln.49-61).

With respect to claim 25, Bartels discloses an electronic control (fig.1 #10,12) including sensing means (fig.1 #23,26) to scan one or more energizing circuits (fig.1 #14) of a device, said energizing circuits containing one or more transducers (fig.1 #22, col.3 ln.2-6), said transducers requiring currents to be energized, said energizing circuits including switches (fig.1 "K1,K2"), said switches capable of carrying said currents, said switches having intended states, said energizing circuits carrying said currents (col.3 ln.52-63), said transducers having a potential to cause said device to operate in a hazardous manner if said transducers are mistakenly energized, said transducers never causing said device to operate in a hazardous manner when said transducers are in an unenergized state (col.1 ln.45-47, Bartels discloses that switch failure may cause hazardous conditions, such as the unexpected powering of a load) , said intended states are known to said control whether said intended states are set by said control or an override in said device (col.3 ln.21-26), said control; identifying any of said switches as functional switches that said sensing means verifies are open when

said intended state is open, identifying any of said switches as erroneously closed switches that said sensing means verifies are not open when said intended state is open (col.2 ln.25-41, col.4 ln.6-17), using at least one of said functional switches to preclude said currents from flowing through one or more of said erroneously closed switches preventing said transducers from being mistakenly energized (col.1 ln.31-36, col.12 ln.49-61).

With respect to claim 26, Bartels discloses the electronic control in accordance with claim 25 wherein at least one of said switches can be independently opened by either said control or an override (col.3 ln.67, col.4 ln.1-5).

With respect to claim 27, Bartels discloses the electronic control in accordance with claim 26, wherein said control signals the operator it has identified one or more of said switches as erroneously closed switches (fig.1 #66-70, col.9 ln.3-17).

With respect to claim 28, Bartels discloses the electronic control in accordance with claim 25 wherein said control continues to operate said transducers in said energizing circuits containing said erroneously closed switches (col.15 ln.7-13).

With respect to claim 29, Bartels discloses the electronic control in accordance with claim 28, wherein said control signals the operator it has identified one or more of said switches as erroneously closed switches (fig.1 #66-70, col.9 ln.3-17).

With respect to claim 31, Bartels discloses the electronic control in accordance with claim 25, wherein said energizing circuits contain at least one externally operated switch, said externally operated switch having an externally determined intended state, said control being unaware of said externally determined intended state, said sensing

means determining whether said externally operated switch is open or closed. It is implied that the power supply (fig.1 #14) contains an externally operated switch controllable by a user for the purpose of turning on and off the functions of the load (fig.1 #22). This externally operated switch would be recognized by the sensing means upon powering of the system, (i.e. detecting a voltage at contacts 18b or 20b).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartels et al (US 6,297,569).

With respect to claims 22-24, Bartels discloses the electronic control in accordance with claim 21, however does not disclose expressly wherein the transducer is a solenoid actuating a valve, a heating element or a motor. Bartels discloses in column 3 lines 2-6, that the load is a combustion control system, but in fact, the load may be any kind of load for which maximum assurance is necessary that it is properly powered and depowered. Official Notice is taken that it is well known in the art that solenoids, heating elements and motors are transducers/loads that are capable of operating in a hazardous condition if not properly powered and depowered. At the time

of the invention it would have been obvious to use the electronic control of Bartels to monitor the powering and depowering of transducers such as, solenoids, heating elements and motors. The motivation for doing so would have been to prevent the transducer from operating in a hazardous manner by monitoring and controlling the power switching of the device.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartels et al (US 6,297,569) in view of Wallaert (US 5,436,788).

With respect to claim 30, Bartels discloses the electronic control in accordance with claim 25, however does not disclose expressly wherein at least one sensor of said sensing means scans said switches in a plurality of said energizing circuits.

Wallaert discloses an electronic control for monitoring the switching (fig.1 #1) in a plurality of energizing circuits (fig.1 #17).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to monitor the switching of a plural load circuit as disclosed by Wallaert by using the invention of Bartels. The logic circuit (fig.1 #12) of Bartels could be easily cascaded or the software could be easily programmed to accept multiple load lines that power a plurality of transducers.

The motivation for doing so would have been to monitor the switching of multiple transducers at the same time with the same microcontroller. This would reduce costs of the electronic control by limiting the number of required circuit elements.

Claims 32-35, 37-38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartels et al (US 6,297,569) in view of Hausman, Jr. et al (US 6,347,028 B1).

With respect to claim 32, Bartels discloses an electronic control (fig.1 #10,12) having output circuitry (fig.1 #25,27,11) to operate a device (fig.1 #22), said control including sensing means (fig.1 #23,26) to scan said output circuitry, said output circuitry including one or more energizing circuits (fig.1 #14), said energizing circuits containing one or more transducers (fig.1 #22, col.3 ln.2-6), said transducers requiring currents to be energized, said energizing circuits including switches (fig.1 "K1,K2"), said switches capable of carrying said currents, said switches having intended states, said energizing circuits carrying said currents (col.3 ln.52-63), said transducers having a potential to cause said device to operate in a hazardous manner if said transducers are mistakenly energized, said transducers never causing said device to operate in a hazardous manner when said transducers are in an unenergized state (col.1 ln.45-47, Bartels discloses that switch failure may cause hazardous conditions, such as the unexpected powering of a load), at least one of said switches being a monitored switch (col.4 ln.6-17), said monitored switch changing state at a frequency, each of said energizing circuits, that include said monitored switch, having off periods when no electricity flows through said monitored switch (col.5 ln.20-49),

Bartels does not disclose expressly wherein said control, uses said sensing means to ascertain said frequency said monitored switch changes state, prolonging said off periods if said frequency is too high for said monitored switch to safely operate.



Hausman discloses a system for monitoring the operation of a transducer (fig.1 #30), for example an incandescent light (col.5 ln.25-26), wherein the switching frequency of the switches (fig.1 #26) controlling the transducer is adjusted by a control circuit (fig.1 #10, col.6 ln.15-30) to compensate for overloading of the switches, so as to prevent the transducer from operating in an hazardous manner. Hausman teaches that the control system reduces the ON time of at least one switching element (i.e. prolonging the OFF period when the switched are considered being in an overloaded condition (col.3 ln.35-65).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the monitoring of switching frequency provided by the control of Hausman to monitor the switching speed of the switches of Bartels.

The motivation for doing so would have been to control the rate at which the switches change state in instances where a transducer/load receives an overload of current due to a prolonged ON portion of a duty cycle. This would prevent the transducer from operating in a hazardous manner.

With respect to claim 33, Bartels discloses the control in accordance with claim 32, wherein said sensing means scans said energizing circuits (col.4 ln.6-17).

With respect to claim 34, Bartels discloses the control in accordance with claim 33, wherein the intended states of said switches are known to said control whether said intended states are set by said control or an override in said device (col.3 ln.21-26), said control; identifying any of said switches as functional switches that said sensing means verifies are in said intended state, identifying any of said switches as non-functional that

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said sensing means verifies are not in said intended states (col.2 ln.25-41, col.4 ln.6-17), using at least one of said functional switches to preclude said currents from flowing through one or more of said non-functional switches preventing said transducers from being mistakenly energized (col.1 ln.31-36, col.12 ln.49-61).

With respect to claim 35, Bartels discloses the electronic control in accordance with claim 34, wherein said energizing circuits contain at least one externally operated switch, said externally operated switch having an externally determined intended state, said control being unaware of said externally determined intended state, said sensing means determining whether said externally operated switch is open or closed. It is implied that the power supply (fig.1 #14) contains an externally operated switch controllable by a user for the purpose of turning on and off the functions of the load (fig.1 #22). This externally operated switch would be recognized by the sensing means upon powering of the system, (i.e. detecting a voltage at contacts 18b or 20b).

With respect to claim 37, Bartels discloses the control in accordance with claim 33 wherein the intended states of said switches are known to said control whether said intended states are set by said control or an override in said device (col.3 ln.21-26).

With respect to claim 38, Bartels discloses the control in accordance with claim 37 wherein at least one of said switches can be independently opened by either said control or an override (col.3 ln.67, col.4 ln.1-5).

With respect to claim 40, Bartels discloses the electronic control in accordance with claim 37, wherein said energizing circuits contain at least one externally operated switch, said externally operated switch having an externally determined intended state,

said control being unaware of said externally determined intended state, said sensing means determining whether said externally operated switch is open or closed. It is implied that the power supply (fig.1 #14) contains an externally operated switch controllable by a user for the purpose of turning on and off the functions of the load (fig.1 #22). This externally operated switch would be recognized by the sensing means upon powering of the system, (i.e. detecting a voltage at contacts 18b or 20b).

Claims 36 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartels et al (US 6,297,569) in view of Hausman, Jr. et al (US 6,347,028 B1) and in further view of Wallaert (US 5,436,788).

With respect to claim 36, Bartels discloses the electronic control in accordance with claim 34, however does not disclose expressly wherein at least one sensor of said sensing means scans said switches in a plurality of said energizing circuits.

Wallaert discloses an electronic control for monitoring the switching (fig.1 #1) in a plurality of energizing circuits (fig.1 #17).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to monitor the switching of a plural load circuit as disclosed by Wallaert by using the invention of Bartels. The logic circuit (fig.1 #12) of Bartels could be easily cascaded or the software could be easily programmed to accept multiple load lines that power a plurality of transducers.

The motivation for doing so would have been to monitor the switching of multiple transducers at the same time with the same microcontroller. This would reduce costs of the electronic control by limiting the number of required circuit elements.

With respect to claim 39, Bartels discloses the electronic control in accordance with claim 37, however does not disclose expressly wherein at least one sensor of said sensing means scans said switches in a plurality of said energizing circuits.

Wallaert discloses an electronic control for monitoring the switching (fig.1 #1) in a plurality of energizing circuits (fig.1 #17).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to monitor the switching of a plural load circuit as disclosed by Wallaert by using the invention of Bartels. The logic circuit (fig.1 #12) of Bartels could be easily cascaded or the software could be easily programmed to accept multiple load lines that power a plurality of transducers.

The motivation for doing so would have been to monitor the switching of multiple transducers at the same time with the same microcontroller. This would reduce costs of the electronic control by limiting the number of required circuit elements.

### ***Response to Arguments***

Applicant's arguments, see interview summary, filed May 2, 2007, with respect to the rejection(s) of claim(s) 32 under Bartels in view of Naruo have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon

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further consideration, a new ground(s) of rejection is made in view of Hausman, Jr. et al (US 6,347,028 B1).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason R. Kurr whose telephone number is (571) 272-0552. The examiner can normally be reached on M-F 10:00am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 273-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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